

## **Lead Scientist's Report**

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**Summary:** This report highlights three items, 1) a vision for the future of the Delta Science Program, 2) an update on the Adaptive Management of Fall Outflow for Delta Smelt Protection and Water Supply Reliability (Fall X2 Action), and 3) recent scientific findings on nutrient availability and wetland restoration.

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### **Future of the Delta Science Program**

The mission of the Delta Science Program is to provide the best possible unbiased scientific information to inform water and environmental decision making in the Delta. The Delta Science Program accomplishes its mission through funding research, synthesizing and communicating scientific information for policymakers and decision makers, promoting independent scientific peer review, and coordinating with Delta agencies to promote science-based adaptive management. For the Delta Science Program to continue to meet its mission and to support implementation of the Delta Plan, the Lead Scientist recommends reorganizing the program into four units, with research programs integrated into each:

- Unit 1 - Expert Panels, Workshops, Peer Review, and Support of the Delta Independent Science Board;
- Unit 2 - Delta Plan Early Consultations, Consistency Determinations, Planning of Adaptive Management, and Adaptive Management Implementation;
- Unit 3 - Performance Measures, Effectiveness Evaluation, and Science Communication; and
- Unit 4 - Modeling, Analysis, Synthesis, and Integration.

The four units would operate with a high degree of coordination and communication among themselves as well as with other agencies and organizations. An estimated annual budget for the four units and associated research programs is \$20M. For more details please see Attachment 1 – Delta Science Program and the Delta Plan.

### **Update on the Fall X2 Action**

At the August 2011 Council meeting, the Lead Scientist for the Interagency Ecological Program (IEP), Anke Mueller-Solger, provided information on the Adaptive Management of Fall Outflow for Delta Smelt Protection and Water Supply Reliability, also known as the Fall X2 Action. X2 is an index for the location of the low salinity zone, an important habitat feature for estuarine species such as delta smelt. The Fall X2 Action is required in the 2008 Biological Opinion on the effects of water project operations on delta smelt. It is intended to improve habitat suitability for delta smelt in wet years such as 2011 by maintaining X2 on average 74 km upstream from the Golden Gate in September and October. On August 31, 2011, Judge Oliver Wanger ruled that "No Fall X2 Action setting the X2 target west of 79 km shall be implemented. All other requirements of the Action, including the timing of the Action and the mechanisms for its measurement, shall remain unchanged." The ruling was followed by a court-ordered preliminary injunction against full implementation of the Fall X2 Action on September 2 which is being appealed. Implementation of adaptive management for the newly altered action officially began on September 1. The IEP is engaged in the scientific aspects of the adaptive management plan. The intent is to monitor the effectiveness of the action and learn about underlying

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mechanisms and possible alternatives that would better protect delta smelt as well as water supplies. The more eastward placement of X2 at 79 km instead of 74 km will weaken the effectiveness of the action as an experimental treatment in the adaptive management plan and make it more difficult to discern signals attributable to this action. Results from the studies and monitoring will be reported and evaluated in the spring and summer of 2012. To access the Court orders and the draft plan for Adaptive Management of Fall Outflow for Delta Smelt Protection and Water Supply Reliability please visit: <http://www.fws.gov/sfbaydelta/ocap/>.

**Nutrient Availability and Wetland Restoration**

Recent research in the Florida Everglades and coastal wetlands of Louisiana has reported concerns that nutrient enriched water, by either phosphorous or nitrogen, can lead to unfavorable outcomes for wetland restoration when compared to historical conditions. Nutrient enrichment in the water promotes poor root growth and shifts production from rooted-marsh vegetation to algae, floating vegetation, and non-native plant species. A recent publication in the Journal of Geophysical Research Letters by Kearney et al. (2011) highlights these points. Water quality needs to be considered when planning wetland restoration projects. To access the Kearney et al. 2011 paper please visit:

<http://www.agu.org/pubs/crossref/2011/2011GL047847.shtml>.

**List of Attachments**

Attachment 1: Delta Science Program and the Delta Plan

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